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SATURN V PROGRAM DIRECTIVE

SATURN V PROGRAM DIRECTIVE NUMBER: 4

DATE: January 14, 1965

SUBJECT: SATURN V COMPONENT QUALIFICATION TEST DIRECTOR

PROGRAM DIRECTIVE

This directive appoints Mr. Jewel W. Moody as the Saturn V Component Qualification Test Director and authorizes him to make Saturn V program decisions, in my behalf, necessary to assure that Component Qualification tests are completed prior to ground system tests where such components are critical to the success of the system tests; that all component qualification tests are completed prior to their use in a flight vehicle; and that all Component Qualification and Reliability tests are completed prior to the flight of the first manned vehicle.

I. PURPOSE

The purpose of establishing a Saturn V Component Qualification Test Director (hereinafter called "Component Test Director") is to establish, integrate, and control the Saturn V Component Qualification and Reliability Test Program.

II. SCOPE

The Component Test Director will be responsible for Saturn V Component Qualification and Reliability Test Programs. The Component Test Director will integrate and control the various component test programs within Saturn V to the degree necessary to assure mission success within the program constraints.

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III. APPLICABILITY

The component test programs for the following will fall within the purview of the Component Test Director:

1. S-IC Stage and Associated GSE.
2. S-II Stage and Associated GSE.
3. S-IVB Stage and Associated GSE.
4. I.U. and Associated GSE.
5. Launch Vehicle GSE.

IV. RESPONSIBILITY AND AUTHORITY

2 A. Establishing of Qualification and Reliability Test Program Requirements.

The Component Test Director shall establish the Saturn V Qualification and Reliability Test Program requirements to include the following:

1. Integrated test planning.
2. Hardware generation levels at which tests will be conducted.
3. Test types and definitions.
4. Test documentation that must be generated and controlled.
5. Status reporting required for management visibility.

B. Development of Component Qualification and Reliability Test Programs by Stage, I.U., and Vehicle GSE

(1) The Stage, I.U., and Vehicle GSE Managers (hereinafter called "Stage Manager") are responsible for developing or revising the component test programs in their respective areas in accordance with the requirements established by the Component Test Director in paragraph IV. A. above. Further, these managers shall submit these component test

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programs to the Component Test Director for finalization and approval. As a minimum the following information shall be submitted to the Component Test Director:

1. List of components to be tested.
 2. Priority of each test.
 3. Environmental criteria.
 4. Number of samples for each component.
 5. Tests that must be completed prior to major events, such as, battleship tests, all-systems test, first flight, first manned flight, etc.
 6. Location and organization to perform tests.
 7. Types of contractor documents to be submitted, generated, and approved.
 8. Monitoring and corrective action channels.
 9. Cost and Schedule of complete program.
- C. Establishment of the Qualification and Reliability Test Program for each Stage, I.U., and Launch Vehicle GSE

The Component Test Director shall establish each component test program by finalizing and approving the test program submitted by the stage manager in accordance with paragraph IV. B. above.

D. Issue of Component Qualification and Reliability Test Programs as a Part of the Master Test Plan

After each Stage, I.U., and Vehicle GSE component qualification and reliability test programs have been finalized and approved (established) by the Component Test Director, they shall be issued as a part of the Master Test Plan by increments as they become available. The Master Test Plan will be updated when the Component Test Director approves changes to the initial publication.

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E. Implementation of the Component and Reliability Test Programs

The stage managers are responsible for the implementation of the component test programs that have been established (approved) in accordance with paragraph IV. C. above.

F. Changes and Deviations to the Established Component Qualification and Reliability Test Programs

All changes and deviations to established component test programs shall be submitted to the Component Test Director for approval. The following information shall be submitted in support of a requested change or deviation:

1. Description of the proposed change or deviation.
2. Justification.
3. Impact on cost and schedule.
4. Impact on engineering confidence in mission success.
5. Alternate actions, if any, to be taken based on requested change or deviation.
6. Impact of proposed change on launch or flight operations.
7. Recommendation of Stage Manager.

The Component Test Director will approve or disapprove the change or if the change is not within program constraints and the Component Test Director recommends the change, then he will submit the change to the Program Manager for approval or appropriate action.

G. Relationship of the Component Test Director to the Stage Contractors

The Component Test Director shall visit the contractor plants as necessary to assure himself that the program is being implemented as intended and to determine when corrective action is required.

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Further, the Component Test Director may prepare correspondence for the Stage Manager's signature to expedite action, or he may place requirement for preparation of such correspondence on the appropriate stage personnel. In no case will the Component Test Director give direction directly to the contractors.

H. Support from other Organizations in I.O. and R.&D.O.

The stage managers shall obtain support from R.&D.O. as necessary for developing, implementing, and monitoring the component test programs. The Component Test Director is authorized to call upon other organizations in I.O. and R.&D.O. for support as deemed necessary to perform his mission. The Component Test Director will negotiate with the stage managers and with R.&D.O. the depth of support required in the overall Saturn V component test program. The depth of support will be influenced by the specific problem areas and by a reasonable distribution of support among stages. Once the Component Test Director has negotiated and determined the optimum depth of support required for the various stages, this information will be forwarded to the stage managers and they will deal directly with R.&D.O. in acquiring this support. All problems encountered with R.&D.O. support by the stage managers will be brought to the attention of the Component Test Director.

I. Monitoring of Milestones which are Prerequisites to Qualification Testing

In order to establish and maintain a realistic qualification test schedule and to take timely corrective action it is necessary to monitor certain milestones which are prerequisites to component qualification testing. If these milestones slip and a recovery schedule (which usually requires special activities) cannot be introduced, it is inevitable that the respective qualification tests will slip. These slippages can be forecasted. Therefore, the stage managers shall place a requirement on the prime contractors to supply the following for each component incorporated in the current qualification test program:

1. Date design definition scheduled for completion (or actually completed).

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2. Date design development test scheduled for completion (or actually completed).
3. Date procurement initiation scheduled (or actually completed).
4. Vehicle, GSE, or Program element effective for which qualification and reliability tests are to be performed as a prerequisite.
5. Date the qualification and reliability test specifications are scheduled for completion (or actually completed).
6. Identification of Test Specification by contractor number.
7. Date the qualification and reliability test hardware is scheduled for delivery (or actually delivered).
8. Date the qualification and reliability tests are scheduled to be started and completed (or actually started and completed).
9. Date the qualification and reliability test reports will be available.
10. Scheduled approval of qualification and reliability test results or recommended corrective action.

The above shall be supplied to the Component Test Director and to the Chief, Saturn V Systems Engineering Office, as soon as possible. Further a quarterly report will follow which will include any changes made during the quarter and recovery actions planned by the contractor if any milestones (scheduled in 1 through 10 above) have been missed.

J. Qualification and Reliability Test Status Reporting

It shall be the responsibility of the stage managers to provide reports to the Component Test Director in accordance with the reporting requirements to be established as required in paragraph IV. A. 5. above. The Component Test Director shall report monthly to the Saturn V Program Manager with copies to the stage managers to include the following:

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1. Status.
2. Progress.
3. Trends.
4. Unresolvable problems.

V. DEFINITION

The term "Component" as used herein covers all hardware generation levels below the subsystem level (propulsion system, guidance and control system, etc.) including assemblies (Black boxes) such as distributors and stabilized platforms; components such as actuators, valves, gyros, etc.; and piece parts.



Arthur Rudolph
Manager, Saturn V Program

Distribution
C (Through Branch Level)